

a layer of an oxidation-resistant metal on the contacts of the electronic devices of said panel;

a plurality of electrically conductive bumps formed of a flexible electrically conductive adhesive having a modulus of elasticity less than about 35,000 kg/cm<sup>2</sup> (about 500,000 psi), wherein said plurality of bumps is deposited on the oxidation resistant layer in the pattern of contacts of the electronic device; and

a solderable electrically conductive metal layer formed on an exposed surface of said electrically conductive bumps distal the contacts of the electronic devices and in electrical contact therewith,

wherein said panel includes one of a semiconductor wafer having a plurality of semiconductor devices formed therein and a panel of electrical substrates having a plurality of electrical substrates formed therein.

#### REMARKS

Claims 1-51 are pending in the captioned Application in which claims 16-30 and 32-36 are rejected, claim 31 is objected to and claims 1-15 and 37-51 are withdrawn by the Examiner in face of a restriction requirement.

Claim 31 is rewritten in independent form thereby to overcome the objection thereto as depending from a rejected base claim. Withdrawal of the objection and the allowance of claim 31 is solicited.

#### RESTRICTION REQUIREMENT:

Reconsideration of the restriction requirement which the Examiner has now made final is respectfully requested. Applicant elected (with traverse) Group II in the previous response including claims 16-36 drawn to an interposer.

Claims 1-15 of Group I are directed to an electronic package comprising at least one electronic device and a solderable flexible adhesive interposer having certain recited features.

Claims 16-36 of Group II are directed to a solderable flexible adhesive interposer

having the same certain recited features as the solderable flexible adhesive interposer recited in claims 1-15. It is submitted that at least claim 1 of Group I and at least claim 16 of Group II require the same particulars for patentability and so restriction as between Groups I and II is improper and should be withdrawn.

In addition, Applicants' previous response provided reasons overcoming the rebuttable presumption accorded the Examiner for making a *prima facie* explanation in an *initial* restriction requirement. MPEP §803. Applicants provided reasons why the Examiner's explanation was in error. Because "search and examination of the entire application can be made without serious burden, the Examiner must examine it on the merits, even though it contains claims to independent and distinct inventions," MPEP §803 (emphasis added), even if the Examiner's assertion of distinctness is correct.

It is a matter of fact that the claims of Groups I and II may each include structures with the same number of layers, and merely adding a layer does not change the search required and should not change the classification. In fact, the Examiner in examining the claims of elected Group II must have already searched for articles having one layer, e.g., as within the scope of claim 16, and having two or more layers, e.g., as covered by claim 23.

"It still remains important ... that no requirements be made which might result in the issuance of two patents to the same invention." MPEP §803.01. The present requirement creates the exact situation that the MPEP seeks to avoid.

Withdrawal of the restriction and the examination and allowance of claims 1-51 is proper and such action is solicited.

Applicant hereby restates the arguments set forth in the previous Response in their entirety below, requests reconsideration thereof and examination of claims 1-51.

Restated Argument:

*The Examiner's stated reason for maintaining the restriction is that "Second, examiner has distinct (sic) 'at least two adjacent layers' which are start (sic) at two layers, one layer is not equal to two layers; therefore Group I is distinct from Group II." The reasoning is faulty and illogical. Both claim 1 of Group I and claim 16 of Group II recite the same structure, namely "at least one layer of flexible dielectric adhesive" and so both claims of Group I and*

*of Group II read on structures having one, two, three or more layers, i.e. structures having a plurality of layers. Thus, the Examiner's distinction is without basis in fact, and so the restriction requirement should be withdrawn.*

*Examination of the claims of Groups I and II in the present Application is consistent with both the extent of a proper search and with other patents, and a proper search must encompass prior art relating to interposers of one and plural layers and utilized with a wide variety of electronic devices and substrates, for the reasons set forth in the previous response.*

*Claims 37-51 of Group III are directed to a method for making a solderable flexible adhesive interposer having certain recited features which are similar to those of the claims of Groups I and II. The searching required for examination of all of the claims pending is not substantially greater than is examining only the claims of Group II, for example, because the references that disclose the article also in many instances also describe the method for making the article. For example, U.S. Patents 6,288,905 and 6,376,769 (issued from priority applications to the present application), both include claims directed to an article and to the method for making the article, and U.S. Patent 6,376,769 includes claims directed to an interposer, to a package including an interposer, and to a method for making the package.*

*Thus, examination of the claims of Groups I, II and II is consistent with PTO practice in many other applications relating to similar technology, including U.S. Patents 6,288,905 and 6,376,769, just mentioned. Other references cited in U.S. Patent 6,376,769 are similar. There is no legal or logical reason for an inconsistent result in this Application.*

*Accordingly, it is requested that the restriction be reconsidered and withdrawn, and that all of Applicant's claims 1-51 be examined in the present Application.*

REJECTION UNDER 35 U.S.C. §112:

*Claims 16-29 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner points out two places in each of claims 16 and 23 where the phrase "one of an electronic device and a substrate" is recited. Applicant traverses the rejection.*

*The phrase "one of an electronic device and a substrate" is logically and grammatically correct and is the same as saying "an electronic device or a substrate" and is accepted proper*

and definite claim terminology. The phraseology "one of A and B" was often utilized in place of the phrase "A or B" in the years before the Patent Office guidelines were changed to allow "or" statements in claims. Thus, claims 16-29 are not indefinite.

However, in the interest of advancing prosecution, Applicant amends claims 16 and 23 to recite "an electronic device or a substrate." This amendment is a grammatical change to employ a phrase that is the exact equivalent of the original wording and so no claim element or limitation is narrowed thereby, and Applicant reserves the right to assert the doctrine of equivalents with respect thereto.

Withdrawal of the rejection and allowance of claims 16-29 is solicited.

REJECTION UNDER 35 U.S.C. §103(a):

Claims 16-30 and 32-36 are rejected under 35 U.S.C. §103(a) as being unpatentable over US 5,558,928 to DiStefano et al in view of US 5,545,475 to Korleski.

DiStefano et al describes multi-layer circuit structures and methods for making same and components for use therein. DiStefano et al describe a multi-layer structure (e.g., Figure 3) in which plural circuit panels 10a, 10b, 10c are assembled (laminated) with an interposer 12a, 12b therebetween, and wherein a flowable adhesive 48 of each interposer 12 provides an electrical connection between a conductor 22 of one circuit panel 10a and a conductor 22 of an adjacent circuit panel 10b. (E.g., column 12, lines 30-60 and column 13, lines 10-54).

Examiner asserts that DiStefano et al describes a "flexible dielectric adhesive (38, 40 - figure 2, column 9, lines 48-59)" whereas what DiStefano et al does describe is a "flowable material" 48 (Id.). Examiner further asserts that DiStefano et al describes "conductive vias being of a flexible electrically conductive adhesive (48, column 10, line 42)" whereas what DiStefano et al does describe is a "flowable electrically conductive material" 48 (Id.) and that the flowable material 48 may be a metallic alloy as for brazing and solder as well as organic polymers (column 10, line 60 to column 11, line 27). These differences of fact at the base of the rejection and they alone should render the rejection as overcome.

In addition, Examiner incorrectly asserts that DiStefano et al describe a "solderable electrically conductive metal (22, column 8, line 9) formed on at least one exposed surface of

said conductive vias and in electrical contact therewith.” What DiStefano et al describes is a conductor 22 that is not on the interposer 12, but is a conductor 22, 28 formed on a separate and different structure, i.e. on the circuit panel 10, as is evident from Figures 1 and 2 thereof and as is expressly described in the specification at column 8, lines 20-32. Neither conductors 22 nor conductive material 28 of DiStefano et al are formed on the exposed surface of a conductive via of a flexible electrically conductive adhesive through the layer of flexible dielectric adhesive.

Moreover, the conductive material 48 of interposer 12 of DiStefano et al is not solderable, but is flowable for connecting to an adjacent structure 10.

Korleski describes a micro-fiber reinforced porous polymer film prepared from a mixture of polytetrafluoroethylene particulates and liquid crystal polymer particulates and that may be utilized as a filter media. The subject matter of Korleski relates to filter media and does not describe or suggest an adhesive, either dielectric or electrically conductive. The Examiner refers to certain physical properties of samples of substrate films described in Table 1 of Korleski without any reason except that they superficially appear to be of like value to that recited by Applicant.

Thus, Korleski contains no description and no suggestion that such physical properties of a porous micro filter might apply to other materials, including the materials of DiStefano et al. Korleski and DiStefano et al relate to different art areas and provide no motivation that might lead one of ordinary skill in the art to consider one in view of the other.

The burden is on the Examiner to particularly identify the suggestion, teaching, or motivation in the reference(s) for their combination, and not just naming similarities between the reference(s) and the claimed invention. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654 (Fed. Cir. 2000), 57 U.S.P.Q.2d 1161, 1166; *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999), 50 U.S.P.Q.2d 1614, 1618.

“[A] rejection cannot be predicated on the mere identification ... of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.”

*Ecolchem Inc. v. Southern California Edison*, 56 U.S.P.Q.2d 1065, 1076 (Fed. Cir. 2000)



quoting *In re Rouffet*, 149 Fed.3d 1350, 1357 (Fed. Cir. 1998), 47 U.S.P.Q.2d 1453, 1456. The Examiner has not done so here.

Moreover, the subject matter of Korleski is unrelated to the subject matter of DiStefano et al and there is no description or suggestion or motivation for combining the references. The combination is improper under the law because neither reference suggests its combination with the other. Absent some statement or suggestion within the references themselves that they should be combined, there is no nexus which could substantiate the suggested combination.

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined *only* if there is some suggestion or incentive to do so."

*ACS Hospital Systems, Inc. vs. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

Accordingly, the rejection should be withdrawn because it is improper.

Moreover, even if such combination could be made, the resulting structure would not be that of the claimed invention but would just be that of DiStefano et al which requires a "flowable electrically conductive material." Thus, DiStefano et al does not describe or suggest a flexible electrically conductive adhesive as recited in Applicant's claims.

Further, DiStefano et al describes a circuit structure 10 on which are conductors 22, 28, which circuit structure 10 is separate from interposer 12 and so also does not describe or suggest the plurality of conductive vias of a flexible electrically conductive adhesive having a solderable electrically conductive metal formed thereon as recited in Applicant's claims.

Applicant's claim 16 is patentable at least because it recites:

"a plurality of conductive vias through said layer of flexible dielectric adhesive, said plurality of conductive vias being of a flexible electrically conductive adhesive having a modulus of elasticity less than about 35,000 kg/cm<sup>2</sup> (about 500,000 psi) and being in a pattern adapted for connection to contacts of an electronic device or a substrate, and

"a solderable electrically conductive metal formed on at least one exposed surface of said conductive vias and in electrical contact therewith,

"wherein at least one end of the plurality of conductive vias includes contacts adapted to be soldered to an electronic device or a substrate,"

which is not described or suggested by DiStefano et al and/or Korleski, whether taken individually or properly combined.

Applicant's claim 23 is patentable at least because it recites:

"a plurality of conductive vias through each of said layers of flexible dielectric adhesive, said plurality of conductive vias being of a flexible electrically conductive adhesive having a modulus of elasticity less than about 35,000 kg/cm<sup>2</sup> (about 500,000 psi), said conductive vias in an exposed one of said plurality of flexible dielectric adhesive layers being in a pattern adapted for connection to contacts of an electronic device or a substrate;

"a solderable electrically conductive metal formed on an exposed surface of said conductive vias of the exposed one of said flexible dielectric adhesive layers and in electrical contact therewith, wherein at least one end of the plurality of conductive vias includes contacts adapted to be soldered to an electronic device or a substrate;"

which is not described or suggested by DiStefano et al and/or Korleski, whether taken individually or properly combined.

Applicant's claim 30 is patentable at least because it recites:

"a plurality of electrically conductive bumps formed of a flexible electrically conductive adhesive having a modulus of elasticity less than about 35,000 kg/cm<sup>2</sup> (about 500,000 psi), wherein said plurality of bumps is deposited on the oxidation resistant layer in the pattern of contacts of the electronic device; and

"a solderable electrically conductive metal layer formed on an exposed surface of said electrically conductive bumps distal the contacts of the electronic devices and in electrical contact therewith,"

which is not described or suggested by DiStefano et al and/or Korleski, whether taken individually or properly combined.

Applicant's claims 17-22, 24-29 and 32-36 are patentable at least because they depend from one of patentable claims 16, 23 and 30. In addition, claims 17 and 24 recite patterned metal conductors on one surface of the flexible dielectric adhesive fanning out from at least ones of the conductive vias, claims 18-19, 25-26 and 32-33 recite the flexible conductive adhesive has a modulus of elasticity less than about 7,000 kg/cm<sup>2</sup> and 1,400 kg/cm<sup>2</sup>, which is not described or suggested by DiStefano et al and/or Korleski, whether taken individually or properly combined.

Accordingly, the rejection is overcome and should be withdrawn.

PRIORITY CLAIM:

The specification was previously amended at page 1 to also include a claim to the

priority of U.S. Provisional Application Serial Number 60/180,544 filed February 7, 2000, and Applicant claimed the priority thereof in the present Application. It is noted that the present Application was filed prior to the effective date of the present rule regarding priority claims. Applicant requests that the record be corrected to also reflect priority to Application Number 60/180,544, and that confirmation thereof be provided in the next paper from the Office.

AMENDED DRAWING:

Submitted herewith are two (2) sheets of drawing which include the amendment to Figure 1 submitted October 10, 2002, which was approved by the Examiner.

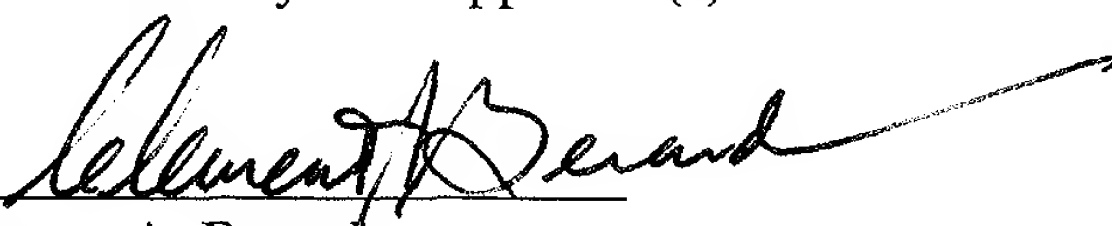
CONCLUSION:

Applicant respectfully requests that the restriction be reconsidered and withdrawn, that the objections and rejections be withdrawn, and that the Application including claims 1-51 be allowed and passed to issue.

The number of claims being the same as or less than the number previously paid for, no fee is due in this timely-filled response. Should any fee be due in consequence of this response, please charge such fee and deposit any refund to Deposit Account 04-1406.

The Examiner is requested to telephone the undersigned attorney if there is any question or if prosecution of this Application could be furthered by telephone.

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